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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/757,157	01/13/2004	Michael Humburg	(WW) 29516 P US	3536

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M. Robert Kestenbaum
11011 Bermuda Dunes NE
Albuquerque, NM 87111

EXAMINER	
BERTHEAUD, PETER JOHN	

ART UNIT	PAPER NUMBER
3746	

DATE MAILED: 10/04/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/757,157	HUMBURG, MICHAEL	
	Examiner	Art Unit	
	Peter J. Bertheaud	3746	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 January 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-14* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-14* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *13 January 2004* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *4/13/2006*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. The drawings are objected to because the reference numbers, as well as the figure names, are unclear. Because they are hand written, the numbers and figure names are difficult to read and it is often hard to differentiate which number indicates which part. It is recommended that the reference numbers and figure names be replaced with clearly legible print. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1, 5, 10 and 11 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Lines 7-9 contain the phrase "upon movement of the displacement piston element from the first piston position to the second piston position, a volume decrease of the inlet chamber is greater than a volume increase of the outlet chamber." This phrase is contradictory because previously in the claim it is stated that the inlet chamber is minimized when the piston is in first position; therefore, if the inlet chamber volume is already minimized it is impossible for it to decrease as the piston moves to second position. For the purposes of examination this phrase has been given no patentable weight as it contains many variables (increase, decrease, greater), and if those variables are changed, it could create a subsequent change to the intended meaning of the claim. Please make the appropriate changes in order to clarify the claim.

Claim 5, lines 2 and 3 use the phrases, "preparing the first piston region..." and, "a displacement section is inserted upon movement...". The intended meaning of the claim is made unclear by both of these phrases. Answering what the first piston region is being prepared for, and what the displacement section is being inserted into would help to clarify the claim. Please make the appropriate changes in order to correct the claim.

Claims 10 and 11 recite the limitation "the second valve arrangement" in line 2. There is insufficient antecedent basis for this limitation in claim 1, the claim from which from which it depends.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1, 2, 5-8, 10,11, and 14 are rejected under 35 U.S.C. 102(b) as being anticipated by Bair (U.S. Patent No. 4,349,130).

Bair discloses all the limitations as claimed including the following: a metering pump for a vehicle heater comprising an inlet chamber (107 in Fig. 4), an outlet chamber (109 in Fig. 4), a first valve arrangement (30', 32', 44', 45', 116 in Fig. 4) between the inlet chamber and the outlet chamber which permits a fluid exchange substantially only from the inlet chamber to the outlet chamber, a displacement piston element (30' in Fig. 4), which is movable between a first piston position in which it minimizes the volume of the inlet chamber (Fig. 4, when valve is all the way to the right), and into a second piston position in which it minimizes the volume of the outlet chamber (Fig. 4, when valve is all the way to the left); wherein the first valve arrangement includes a valve seat (32') and a valve member (30') which can be pressed against the valve seat wherein the valve seat of the first valve arrangement is provided on a

housing. Bair also discloses that the displacement element (30') is inserted with a first piston region (see portion to the right of indentation 31b') into the inlet chamber and in the second piston position the displacement piston element (30') is inserted with a second piston region (see portion to the left of indentation 31a') into the outlet chamber, and wherein the displacement piston element (30') can be displaced between the first piston position and the second piston position (see position of 30' in Figure 4). Bair further discloses a metering arrangement, wherein the displacement piston element (30') has a piston section (21', 116') preparing the first piston region and the second piston region, and also a displacement section (47'), which is inserted upon movement of the displacement system element from the first piston position to the second piston position. Bair also discloses that the displacement piston element (30') is displaceable in a piston housing (79) with cylindrical aperture (78); wherein in the piston housing, the region of the inlet chamber (107), into which the first piston region is inserted into first piston position, and the region of the outlet chamber (109), into which the second piston region is inserted in the second piston position, are at least partially formed. Bair further discloses that the piston housing (79) is at least regionally surrounded by a chamber housing (80) and wherein the inlet chamber and/or the outlet chamber is/are formed at least partially between the piston housing (79) and the chamber housing (80). Bair also discloses that the first valve arrangement (30') has a spring prestressed valve member, and that the second valve arrangement (92) is constructed as a check valve.

Thus the reference reads on the claims.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 3 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bair (4,349,130), as applied above, in view of Bez (U.S. Patent No. 4,560,327).

Bair, as applied above, discloses all the limitations substantially as claimed except for the displacement piston element having, in a first piston region, a first displacement surface effective upon movement of the displacement piston element in the direction toward the first piston position, and having a second displacement surface effective for movement of the displacement piston element in the direction toward the second piston position; and wherein the first displacement surface is greater than the second displacement surface, having a mutual surface ratio of 2:1.

Bez teaches a porting and ducting arrangement including, a pair of reciprocatory piston and cylinder units (12, 12'), a piston displacement element (36, 36'), and inlet chamber (33, 33'), and an outlet chamber (42, 42'). Bez further teaches the displacement piston element having, in a first piston region, a first displacement surface (25, 25') effective upon movement of the displacement piston element in the direction toward the first piston position, and having a second displacement surface (see surface of piston head that falls on 32, Fig. 1) effective for movement of the displacement piston

element in the direction toward the second piston position; and wherein the first displacement surface is greater than the second displacement surface, having a mutual surface ratio of 2:1 (disclosed by Fig. 1). Bez teaches that this would be advantageous because the first displacement surface is the one responsible for pumping the fluid, therefore, the larger this surface is, the more fluid that can be pumped.

Therefore, it would have been obvious to one skilled in the art at the time of invention to modify metering pump of Bair by modifying the fluid displacement surfaces, as taught by Bez, in order to allow the maximum amount of fluid to be pumped each rotation, while still maintaining a steady piston movement from first, to second, and back to first position, and also allowing a space for fluid to pass through the chambers.

8. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bair (4,349,130), as applied above, in view of Schuller (U.S. Patent No. 6,302,663).

Bair, as applied above, discloses all the limitations substantially as claimed except for a fluid supply duct being provided in the displacement piston element, and having a mouth at the first piston region to the inlet chamber, and having the ability to be closed by a second valve arrangement which permits fluid exchange substantially only from the fluid supply duct to the inlet chamber.

Schuller teaches a piston pump (10) including, a piston (34), an inlet chamber (74) and an outlet chamber (94). Schuller further teaches a fluid supply duct (60) provided in the displacement piston element (34), and has a mouth (40) at the first piston region to the inlet chamber (74), and can be closed by a second valve arrangement (see col. 4, lines 41-62) which permits fluid exchange substantially only

from the fluid supply duct to the inlet chamber. Schuller teaches that this would be advantageous because this check valve arrangement would not allow fluid to flow backwards in the system.

Therefore, it would have been obvious to one skilled in the art at the time of invention to modify metering pump of Bair by adding the fluid supply duct and second valve arrangement, as taught by Schuller, in order to first decrease the size of the pump by combing the piston shaft and fluid supply duct, and second, keep the fluid from flowing backwards in the system.

9. Claims 12 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bair (4,349,130), as applied above, in view of Falk (U.S. Patent No. 6,796,777).

Bair, as applied above, discloses all the limitations substantially as claimed except for the displacement piston element having an electromagnetically effective drive, wherein the drive includes a coil/armature arrangement the armature being formed by the piston element.

Falk teaches an electromagnetic pump (10) including, a cylindrical body or housing (32) a fluid receiving chamber (14), a fluid output chamber (16), and a plunger portion (59). Falk further discloses that the pump has an electromagnetically effective drive, wherein the drive includes a coil/armature arrangement (see col. 7, lines 8-13) the armature (45) being formed by the piston element. Falk teaches that this would be advantageous because it would allow for fewer parts and faster manufacturing time.

Therefore, it would have been obvious to one skilled in the art at the time of invention to modify metering pump of Bair by having an electromagnetically effective

drive, wherein the drive includes a coil/armature arrangement the armature being formed by the piston element, as taught by Falk, in order to have fewer moving parts in the final construction of the pump, therefore decreasing the likelihood of failure.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. These references are noted in the attached form 892.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Peter J. Bertheaud whose telephone number is (571) 272-3476. The examiner can normally be reached on M-F 9am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Anthony Stashick can be reached on (571) 272-4561. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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ANTHONY D. STASHICK
PRIMARY EXAMINER